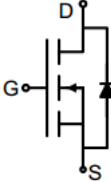
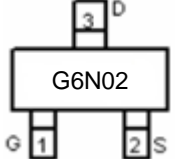
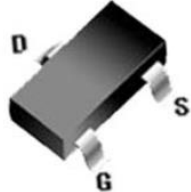


# N-Channel Trench MOSFET

<b>Description</b> <p>The G6N02L uses advanced trench technology to provide excellent <math>R_{DS(ON)}</math>, low gate charge. It can be used in a wide variety of applications.</p>		 Schematic diagram	
<b>General Features</b> <ul style="list-style-type: none"> <li>● <math>V_{DS}</math> 20V</li> <li>● <math>I_D</math> (at <math>V_{GS} = 10V</math>) 6A</li> <li>● <math>R_{DS(ON)}</math> (at <math>V_{GS} = 4.5V</math>) &lt; 11.3m<math>\Omega</math></li> <li>● <math>R_{DS(ON)}</math> (at <math>V_{GS} = 2.5V</math>) &lt; 14.1m<math>\Omega</math></li> <li>● 100% Avalanche Tested</li> <li>● RoHS Compliant</li> </ul>		 Marking and pin assignment	
<b>Application</b> <ul style="list-style-type: none"> <li>● Power switch</li> <li>● DC/DC converters</li> </ul>		 SOT-23-3L	
<b>Device</b>	<b>Package</b>	<b>Marking</b>	<b>Packaging</b>
G6N02L	SOT-23-3L	G6N02	3000pcs/Reel

Absolute Maximum Ratings $T_C = 25^\circ\text{C}$ , unless otherwise noted			
Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Continuous Drain Current	$I_D$	6	A
Pulsed Drain Current (note1)	$I_{DM}$	24	A
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Power Dissipation	$P_D$	1.8	W
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 To 150	$^\circ\text{C}$

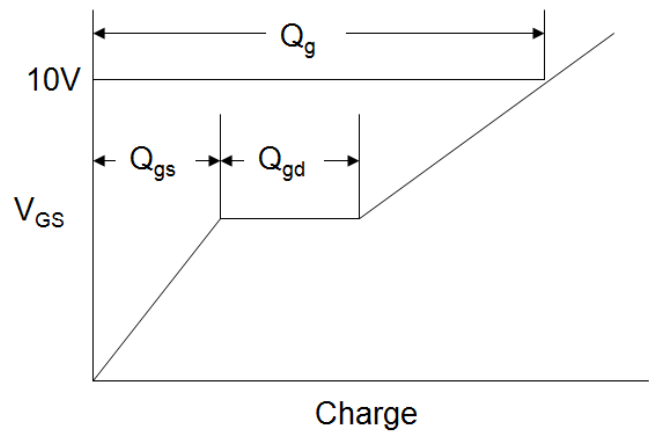
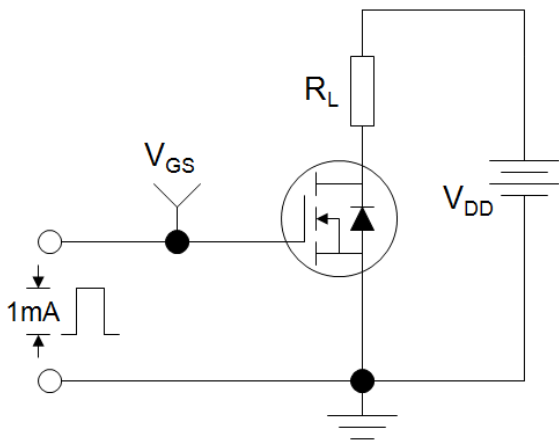
Thermal Resistance			
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	$R_{thJA}$	80	$^\circ\text{C/W}$

Specifications $T_J = 25^\circ\text{C}$ , unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
<b>Static Parameters</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20	--	--	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 20V, V_{GS} = 0V$	--	--	1	$\mu A$
Gate-Source Leakage	$I_{GSS}$	$V_{GS} = \pm 12V$	--	--	$\pm 100$	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.7	0.9	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 3A$	--	10	11.3	m $\Omega$
		$V_{GS} = 2.5V, I_D = 3A$	--	12	14.1	
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=6A$	--	50	--	S
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0V,$ $V_{DS} = 10V,$ $f = 1.0MHz$	--	1140	--	pF
Output Capacitance	$C_{oss}$		--	165	--	
Reverse Transfer Capacitance	$C_{rss}$		--	110	--	
Total Gate Charge	$Q_g$	$V_{DD} = 4.5V,$ $I_D = 6A,$ $V_{GS} = 10V$	--	12.5	--	nC
Gate-Source Charge	$Q_{gs}$		--	1.2	--	
Gate-Drain Charge	$Q_{gd}$		--	2.7	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 4.5V,$ $I_D = 3A,$ $R_G = 3\Omega$	--	2.7	--	ns
Turn-on Rise Time	$t_r$		--	3	--	
Turn-off Delay Time	$t_{d(off)}$		--	37	--	
Turn-off Fall Time	$t_f$		--	7	--	
<b>Drain-Source Body Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$	$T_C = 25^\circ\text{C}$	--	--	6	A
Body Diode Voltage	$V_{SD}$	$T_J = 25^\circ\text{C}, I_{SD} = 1A, V_{GS} = 0V$	--	0.6	1	V

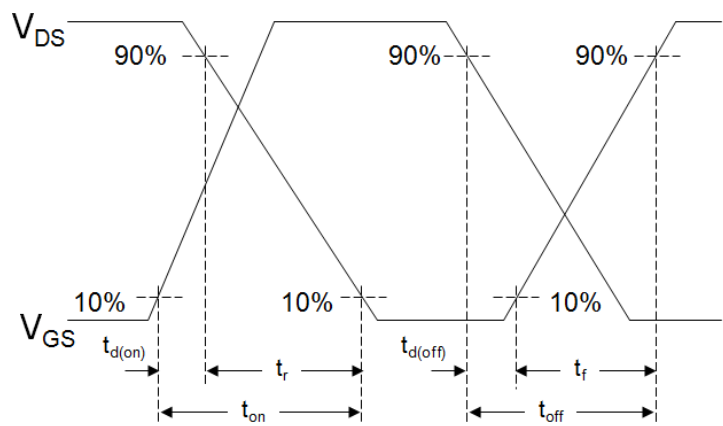
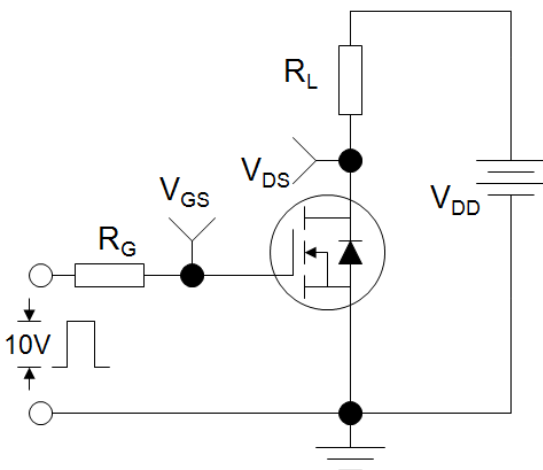
**Notes**

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Identical low side and high side switch with identical  $R_G$

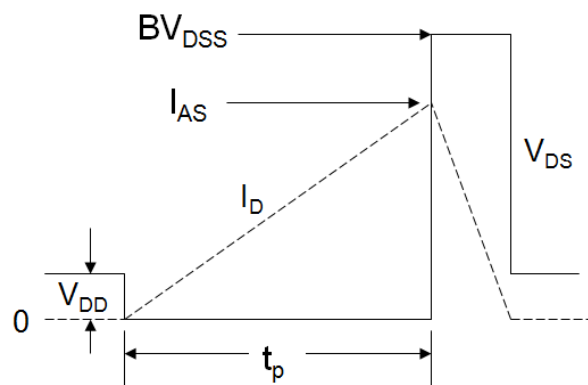
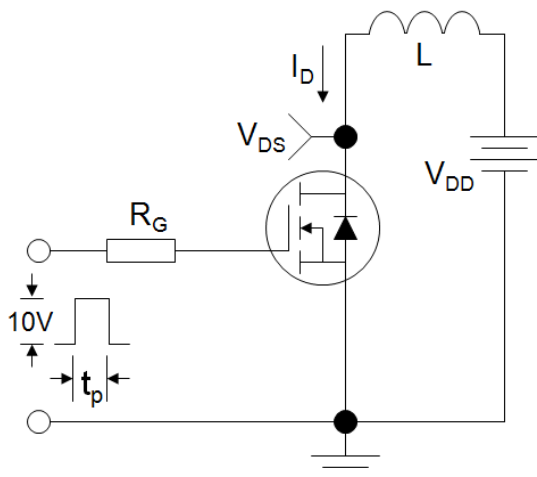
Gate Charge Test Circuit



Switch Time Test Circuit



EAS Test Circuit



Typical Characteristics  $T_J = 25^\circ\text{C}$ , unless otherwise noted

Figure 1. Output Characteristics

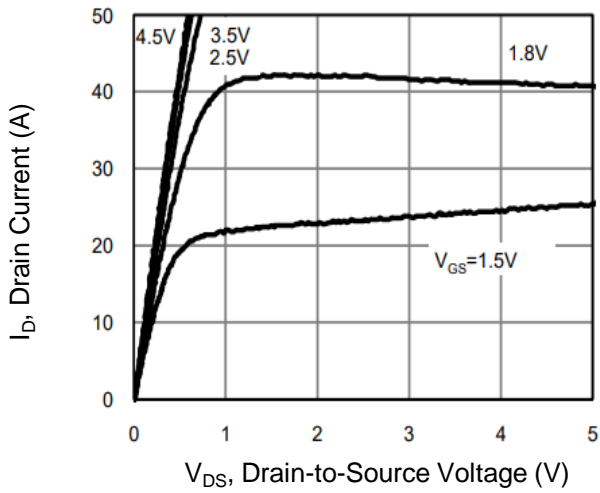


Figure 2. Transfer Characteristics

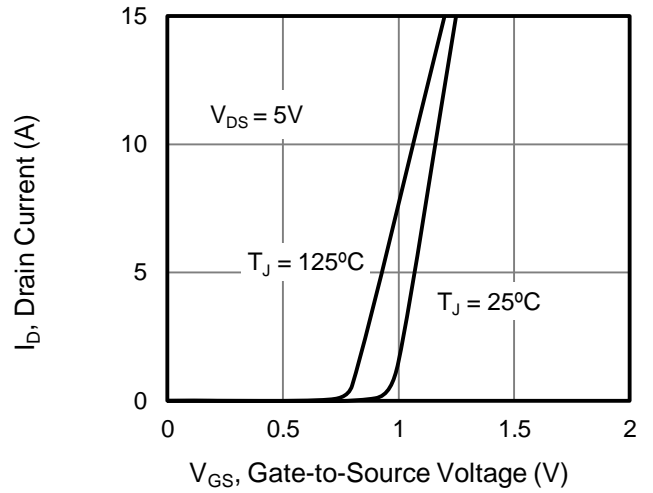


Figure 3. Drain Source On Resistance

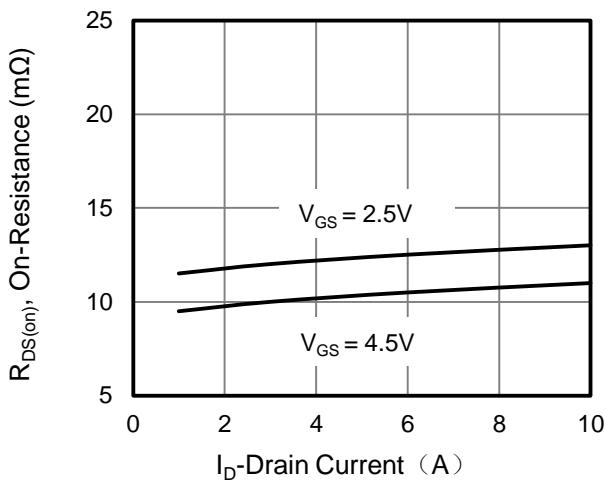


Figure 4. Gate Charge

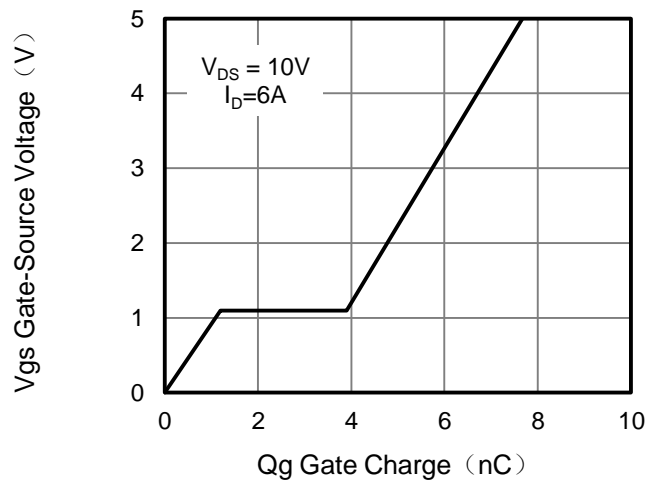


Figure 5. Capacitance vs Vds

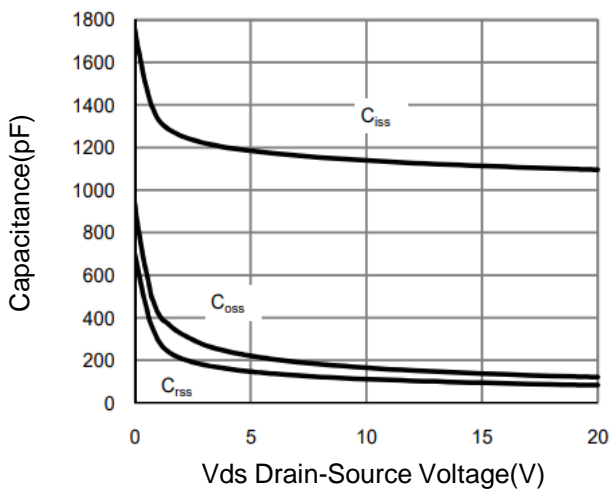
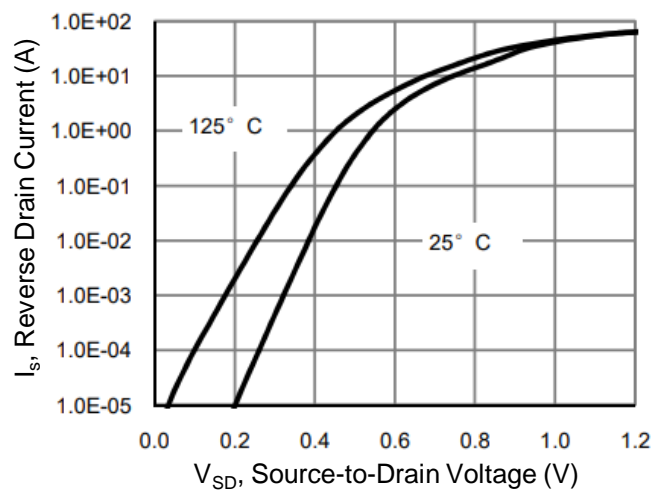


Figure 6. Source-Drain Diode Forward



Typical Characteristics  $T_J = 25^\circ\text{C}$ , unless otherwise noted

Figure 7. Drain-Source On-Resistance

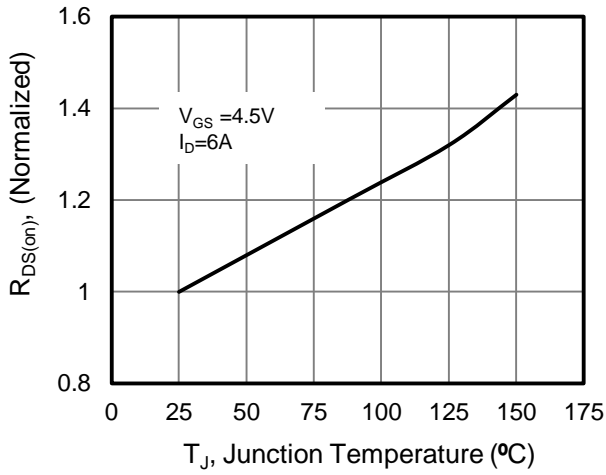


Figure 8. Safe Operation Area

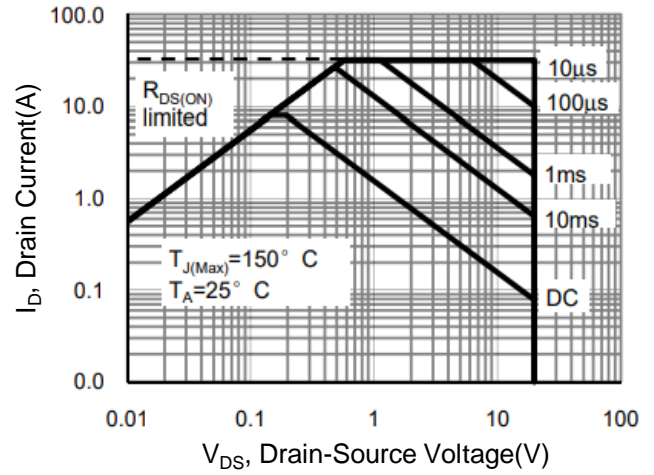
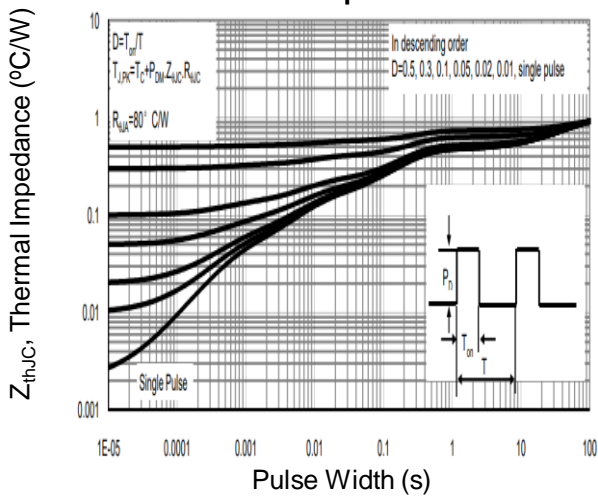
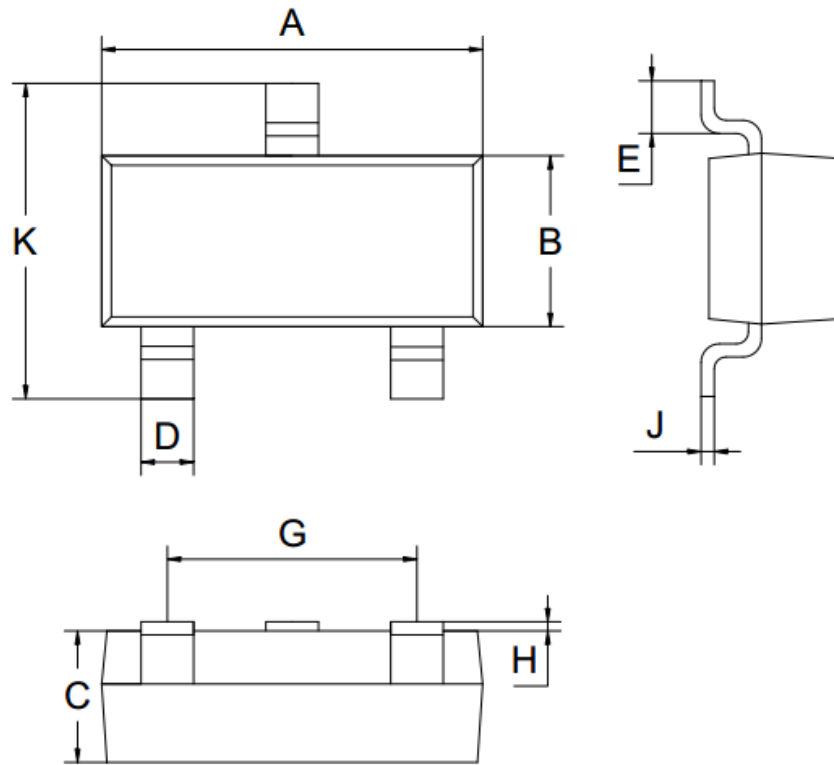


Figure 9. Normalized Maximum Transient Thermal Impedance



SOT-23-3L Package Information



Symbol	Dimensions in Millimeters		
	MIN.	NOM.	MAX.
A	2.80	2.90	3.00
B	1.50	1.60	1.70
C	1.00	1.10	1.20
D	0.30	0.40	0.50
E	0.25	0.40	0.55
G	1.90		
H	0.00	-	0.10
J	0.047	0.127	0.207
K	2.60	2.80	3.00
All Dimensions in mm			